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Assessing the Sustainability of the Canada Pension Plan through Actuarial Balance Sheets

Actuarial Study No. 13

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TABLE OF CONTENTS

Page

I. Executive Summary 5
- A. Purpose 5
- B. Scope 5
- C. Main Findings 6
- D. Conclusion 6

II. Historical Background on Financing of the CPP 8
- A. Inception to Pre-1997 CPP Amendments 8
- B. 1997 CPP Amendments 11
- C. Steady-State Funding of the CPP 13

III. Analysis of Assets and Liabilities of the CPP 15
- A. General Methodology 15
- B. Closed Group without Future Accruals 16
- C. Closed Group with Future Accruals 17
- D. Open Group 17
- E. Length of the Projection Period 19
- F. Reconciliation of Changes of Asset Shortfall for Closed Group without Future Accruals 20
- G. Summary of Assets and Liabilities of the CPP 21

IV. Open Group Modified Balance Sheet 24
- A. Best-Estimate Scenario 24
- B. Sensitivity Analysis of the Funded Component 30

V. Conclusion 36

VI. Appendices 37
- A. Principles to Guide Federal-Provincial Decisions on the Canada Pension Plan 37
- B. Bibliography 38
- C. Acknowledgements 38

LIST OF TABLES

		Page
Table 1	Historical Financial Status	10
Table 2	Schedule of CPP Contribution Rates	11
Table 3	Projected Financial Status	14
Table 4	Balance Sheet as at 31 December 2012 for the CPP: Groups with and without Future Benefit Accruals – Comparison of Methodologies	19
Table 5	Open Group Balance Sheet as at 31 December 2012 for the CPP: Various Projection Periods	20
Table 6	Reconciliation of Changes in the Asset Shortfall from 25th to 26th CPP Actuarial Report for Closed Group without Future Benefit Accruals	21
Table 7	Balance Sheet Summary as at 31 December 2012 and 2022 for the CPP: Groups with and without Future Benefit Accruals	22
Table 8	Splitting of CPP Contributions and Expenditures into Pay-As-You-Go and Funded Components	25
Table 9	Open Group Modified Balance Sheet – Best-Estimate Scenario	28
Table 10	Open Group Modified Balance Sheet – Alternative Discount Rates	29
Table 11	Individual Sensitivity Tests	31
Table 12	Open Group Funded Component Balance Sheet: Sensitivity to Fertility Rate	32
Table 13	Open Group Funded Component Balance Sheet: Sensitivity to Mortality Rates	33
Table 14	Open Group Funded Component Balance Sheet: Sensitivity to Real Wage Increase	34
Table 15	Open Group Funded Component Balance Sheet: Sensitivity to Real Rate of Return on Assets	34

LIST OF CHARTS

		Page
Chart 1	Open Group Modified Balance Sheet Approach – Step 1	26
Chart 2	Open Group Modified Balance Sheet Approach – Step 2	27

I. Executive Summary

A. Purpose

This is the thirteenth actuarial study to be published by the Office of the Chief Actuary (OCA). All the findings in this study are based on the 26th Actuarial Report on the Canada Pension Plan as at 31 December 2012 (the "26th CPP Actuarial Report").

This study was undertaken in response to Recommendation #4 made by the independent peer review panel that reviewed the 25th Actuarial Report on the Canada Pension Plan as at 31 December 2009[1] (the "25th CPP Actuarial Report"). The review panel recommended that "an actuarial balance sheet on an open group basis only appear in the actuarial report, and that details and analysis of alternative actuarial balance sheets be dealt with in an OCA Actuarial Study". In January 2012, the OCA published Actuarial Study No. 10 "Measuring the Financial Sustainability of the Canada Pension Plan", in which the financial sustainability of the CPP was analysed using different measures. In particular, the assets and liabilities of the Plan were examined under various closed and open group methodologies. Actuarial Study No. 10 also assessed whether discussed measures of the CPP's financial sustainability are consistent with its partial funding approach and take into account both major sources of the financing of the Plan's future expenditures: contributions and invested assets. The main objective of this Actuarial Study No. 13 is to update information presented in Actuarial Study No. 10 on the basis of the 26th Actuarial Report.

B. Scope

The results contained in this study are based on the "best-estimate" scenario of the 26th CPP Actuarial Report, which was tabled before Parliament on 3 December 2013. The best-estimate scenario consists of long-term projections based on "best-estimate" assumptions. These assumptions reflect the best judgment of the Chief Actuary of the CPP as to future demographic, economic, and financial market conditions that will affect the long-term financial sustainability of the Plan. The projections in this study cover periods of 75 years and longer and place more emphasis on long-term historical trends than on short-term trends.

Section II discusses the history of the Plan and how its financing has evolved from pay-as-you-go to steady-state financing. Section III presents an analysis of the assets and liabilities of the CPP using different balance sheet methodologies. Section IV presents a more in-depth analysis of the balance sheet under the open group methodology, including sensitivity analyses based on different demographic, economic and financial market scenarios. The conclusion follows in Section V. Lastly, three appendices included in Section VI provide, respectively, the principles upon which changes made to the Plan in 1997 (the "1997 Amendments") were based, the references used for this study, and a list of contributors to this study.

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[1] "The Review of the Twenty-Fifth Actuarial Report on the Canada Pension Plan" report by the CPP actuarial review panel and associated documents may be accessed at the following web site: http://www.osfi-bsif.gc.ca/Eng/oca-bac/ipr-rip/Pages/default.aspx

C. Main Findings

- The 26th CPP Actuarial Report concludes that under the 9.9% legislated contribution rate, despite the projected substantial increase in benefits paid as a result of an aging population, the Plan is expected to be able to meet its obligations and to remain financially sustainable over the long term.
- The open group methodology is consistent with the partial funding approach of the CPP since it fully takes into account future contributions to the Plan as a source of financing of its future expenditures. As such, it represents the most appropriate methodology to be used if the Plan's financial sustainability is to be measured by means of its balance sheet.
- Under the open group approach, the best-estimate scenario of the 26th CPP Actuarial Report and the legislated contribution rate of 9.9%, there is an asset shortfall (assets less liabilities, where this difference is termed "asset excess", if positive, or "asset shortfall", if negative) of $9 billion, and the Plan's assets represent more than 99% of its liabilities as at 31 December 2012.
- Under the closed group without future accruals approach, the Plan's asset shortfall is $830 billion, and the assets represent 17% of the Plan's liabilities as at 31 December 2012. Under the closed group with future accruals, the asset shortfall is $566 billion and the Plan's assets represent 63% of its liabilities as at 31 December 2012.
- The balance sheets under the closed group with and/or without future accruals methodologies do not reflect the nature of the partial funding approach of the CPP, whereby future contributions represent a major source of financing of future expenditures. As such, it is inappropriate to reach a conclusion regarding the Plan's financial sustainability considering only the asset shortfalls determined under the closed group with and/or without future accruals balance sheets.
- Under an open group, the obligations of the Plan result from and are met to a large extent by the pay-as-you-go component. Under the best-estimate assumptions, the pay-as-you-go component accounts for 91% of the Plan's total obligations, whereas the funded component only accounts for 9% of the total obligations as at 31 December 2012. Although these relative proportions change over time, the Plan remains financed mostly on a pay-as-you-go basis.
- Changes in the demographic and economic environments vary the extent of the Plan's exposure to financial market risk. Although the main source of financing the Plan's future expenditures are future contributions, the importance of the funded portion of the Plan should not be underestimated.

D. Conclusion

Major amendments in 1997 led to the change in financing of the Canada Pension Plan from a pay-as-you-go (PayGo) basis to a form of partial funding called steady-state funding. The 1997 Amendments, and particularly steady-state funding, restored the Plan's financial sustainability for current and future generations. The purpose of the steady-state financing methodology is to produce an asset/expenditure ratio that is relatively stable over time. According to the 26th CPP Actuarial Report, under the legislated contribution rate of 9.9%, the Plan's assets are expected to increase significantly, with the asset/expenditure ratio growing from 4.7 in 2013 to about 5.4 by 2025 and to 5.9 by 2075. Although a number of indicators

may be used to assess the Plan's financial sustainability, the key legislatively prescribed financial measure for evaluating the Plan is the steady-state contribution rate, specifically, its adequacy and stability over time.

Partially funded systems, as well as pay-as-you-go ones, represent social contracts where, in any given year, current contributors allow the use of their contributions to pay current beneficiaries' benefits. As a result, such social contracts create claims for current and past contributors to contributions of future contributors. The proper assessment of the financial sustainability of a social security pay-as-you-go or partially funded system by means of its balance sheet should take into account these claims. The traditional closed group methodologies do not reflect these claims since only current participants are considered. In comparison, the open group approach does account explicitly for these claims by considering the benefits and contributions of both the current and future plan participants.

The CPP is intended to be long-term and enduring in nature, a fact that is reinforced by the federal, provincial, and territorial governments' joint stewardship through the established strong governance and accountability framework of the Plan. Therefore, if the Plan's financial sustainability is to be measured based on its asset excess or shortfall, it should be done so on an open group basis, which reflects the partially funded nature of the Plan, that is, its reliance on both future contributions and invested assets as means of financing its future expenditures. The inclusion of future contributions and benefits with respect to both current and future contributors in the assessment of the Plan's financial status shows that the Plan is able to meet its financial obligations and is sustainable over the long term.

Future demographic, economic and financial market environments may differ from those assumed under the best-estimate scenario of the 26th CPP Actuarial Report, and as such may impact the Plan's finances differently. It follows that, regardless of the measure used to assess the Plan's financial status, the unique characteristics of the Plan's long-term obligations and the assets needed to meet those obligations, as well as the relation between them, should all be considered to ensure the long-term financial sustainability of the CPP.

II. Historical Background on Financing of the CPP

A. Inception to Pre-1997 CPP Amendments

The Canada Pension Plan came into effect on 1 January 1966 as an earnings-related plan to provide working Canadians with retirement, disability, death, survivor and children benefits. The Plan was established primarily to assist with income replacement upon retirement. Retirement benefits under the Plan are meant to replace approximately 25% of a beneficiary's pre-retirement earnings up to $49,840 in 2014 (the five-year average of the Year's Maximum Pensionable Earnings (YMPE)).

The Plan covers employees and self-employed persons between the ages of 18 and 70, but excludes those with earnings less than or equal to the Year's Basic Exemption (YBE), members of certain religious groups, persons who qualify under excepted employment and those covered by the Québec Pension Plan (QPP). The QPP came into effect on the same date as the CPP, and the two plans are deemed to be substantially similar.

Contributions to the Plan are based on contributory earnings between the YBE and the YMPE. In 2014, the YBE and YMPE are $3,500 and $52,500, respectively, giving a maximum contributory earnings base of $49,000. The legislated contribution rate is shared equally between an employer and employee, or applied fully to self-employed persons. In 2014, the combined employer-employee contribution rate is 9.9% (4.95% each), giving a maximum contribution of $4,851.00 ($2,425.50 each). The YBE has been fixed at $3,500 since 1997, whereas the YMPE increases each year in line with the percentage increase, as at 30 June of the preceding year, in the 12-month average of the Industrial Aggregate (the measure of average weekly earnings by Statistics Canada). The CPP is progressive in that contributions are based on earnings above the YBE so that lower-income earners pay a lower level of contributions for the same effective benefit protection.

The CPP was initially established as a pay-as-you-go plan with a small reserve and an initial combined employer-employee contribution rate of 3.6%. The CPP (and QPP) became the second tier of Canada's retirement income system, with the first tier being the Old Age Security Program (including the Guaranteed Income Supplement and Allowance) financed from general tax revenues and the third tier comprising fully funded employer-sponsored registered retirement plans and personal savings, including individual registered retirement savings plans and tax-free savings accounts. A registered retirement plan is registered with the federal Canada Revenue Agency and thus qualifies for tax sheltering.

At the time of the Plan's inception, demographic and economic conditions were characterized by a younger population owing to higher fertility rates and lower life expectancies, rapid growth in wages and labour force participation, and low rates of return on investments. These conditions made prefunding of the scheme unattractive and a pay-as-you-go scheme more appropriate. Growth in total earnings of the workforce and thus contributions were sufficient to cover growing expenditures without requiring large increases in the contribution rate. The assets of the Plan were invested primarily in long-term non-marketable securities issued by the provincial governments at lower than market rates, thus providing the provinces with a relatively inexpensive source of capital to develop needed infrastructure. However, changing conditions over time, including lower birth rates, increased life expectancies and higher market returns led to increasing Plan costs and made fuller funding more attractive and appropriate. By the mid-1980s, the net cash flows (contributions less expenditures) had turned

negative and part of the Plan's investment earnings were required to meet the shortfall. The shortfall continued to grow and eventually caused the assets to start decreasing by the mid-1990s. The fall in the level of assets resulted in a portion of the reserve being required to cover expenditures.

In the December 1993 (15th) Actuarial Report on the CPP, the Chief Actuary projected that the pay-as-you-go contribution rate (expenditures as a percentage of contributory earnings) would increase to 14.2% by 2030. It was further projected that if changes were not made to the Plan, the reserve fund would be exhausted by 2015. The Chief Actuary identified four factors responsible for the increasing Plan costs, namely: lower birth rates and higher life expectancies than expected, lower productivity, benefit enrichments, and increased numbers of Canadians claiming disability benefits for longer periods.

The projected increasing financial burden on workers to financially maintain the Plan led to the federal, provincial, and territorial governments' decision to consult with Canadians in a review of the Plan and to restore its long-term financial sustainability. Following the cross-country consultations held in 1996, the federal, provincial, and territorial governments agreed to amend the Plan based on nine guiding principles (see Appendix A).

The historical financial status of the CPP from its inception to year 2012 is shown in Table 1. The decrease in assets in the mid-1990s is observed in the table. The subsequent increase in the assets starting in the year 1998 resulted from the major changes made to the Plan as agreed in 1997. These Plan amendments are discussed in the following subsection.

Table 1 Historical Financial Status[1]

Year	PayGo Rate[2]	Contribution Rate	Contributions	Expenditures	Net Cash Flow	Investment Income[3]	Assets at 31 Dec.[4]	Yield/ Return[4]	Asset/ Expenditure Ratio
	(%)	(%)	($million)	($million)	($million)	($million)	($million)	(%)	
1966	0.05	3.60	531	8	523	2	525	0.7	52.50
1970	0.45	3.60	773	97	676	193	3,596	6.2	24.13
1975	1.42	3.60	1,426	561	865	607	9,359	7.2	11.47
1980	2.72	3.60	2,604	1,965	639	1,466	18,433	8.7	7.64
1981	2.89	3.60	3,008	2,413	595	1,784	20,812	9.4	7.04
1982	2.91	3.60	3,665	2,958	707	2,160	23,679	10.0	6.58
1983	3.73	3.60	3,474	3,598	(124)	2,494	26,049	10.4	6.22
1984	3.66	3.60	4,118	4,185	(67)	2,829	28,811	10.7	5.97
1985	4.31	3.60	4,032	4,826	(794)	3,113	31,130	10.8	5.66
1986	4.20	3.60	4,721	5,503	(782)	3,395	33,743	10.9	4.73
1987	5.02	3.80	5,393	7,130	(1,737)	3,654	35,660	10.9	4.31
1988	5.41	4.00	6,113	8,272	(2,159)	3,886	37,387	11.0	3.98
1989	5.89	4.20	6,694	9,391	(2,697)	4,162	38,852	11.3	3.72
1990	5.82	4.40	7,889	10,438	(2,549)	4,386	40,689	11.4	3.53
1991	6.31	4.60	8,396	11,518	(3,122)	4,476	42,043	11.2	3.22
1992	7.07	4.80	8,883	13,076	(4,193)	4,497	42,347	11.0	2.97
1993	7.79	5.00	9,166	14,273	(5,107)	4,480	41,720	10.9	2.72
1994	8.33	5.20	9,585	15,362	(5,777)	4,403	40,346	11.0	2.52
1995	7.91	5.40	10,911	15,986	(5,075)	4,412	39,683	11.3	2.37
1996	8.71	5.60	10,757	16,723	(5,966)	4,177	37,894	11.0	2.16
1997	8.67	6.00	12,165	17,570	(5,405)	3,971	36,460	10.8	1.99
1998	8.11	6.40	14,473	18,338	(3,865)	3,938	36,535	10.9	1.94
1999	8.23	7.00	16,052	18,877	(2,825)	764	42,783	1.7	2.17
2000	7.69	7.80	19,977	19,683	294	4,446	47,523	9.9	2.32
2001	7.85	8.60	22,469	20,515	1,954	3,154	52,631	6.2	2.43
2002	8.16	9.40	24,955	21,666	3,289	187	56,107	0.3	2.47
2003	8.19	9.90	27,454	22,716	4,738	6,769	67,614	11.1	2.84
2004	8.29	9.90	28,459	23,833	4,626	6,475	78,715	8.9	3.15
2005	8.37	9.90	29,539	24,976	4,563	11,083	94,361	13.2	3.59
2006[5]	8.22	9.90	31,000	26,080	4,920	14,300	113,581	14.4	4.10
2007[5]	8.15	9.90	33,621	27,691	5,930	3,269	122,780	2.7	4.20
2008[5]	8.03	9.90	36,053	29,259	6,794	(18,350)	111,224	(14.2)	3.60
2009[5]	8.16	9.90	37,492	30,901	6,591	9,021	126,836	7.6	3.96
2010	8.83	9.90	35,885	32,023	3,862	11,804	142,502	8.9	4.23
2011	8.73	9.90	38,202	33,691	4,511	8,057	155,070	5.4	4.27
2012	8.84	9.90	40,682	36,321	4,361	15,664	175,095	9.7	4.66

(1) Table 1 corresponds to Table 10 in the 26th CPP Actuarial Report.
(2) The pay-as-you-go rates have been calculated using historical contributory earnings, while the contributions are based on estimates made by the Department of Finance.
(3) Investment income includes both realized and unrealized gains and losses.
(4) Results for years 1966 to 1998 are on a cost basis, while results for years 1999 to 2012 are presented on a market value basis. If assets were shown at market value at the end of 1998, total assets would be $44,864 million instead of $36,535 million.
(5) For the 26th CPP Actuarial Report, historical numbers for years 2006 to 2009 were revised to reflect a change in the methodology used to allocate fiscal year-end accounting adjustments. Since 2010, fiscal year-end adjustments are no longer allocated between two calendar years and are now included in the calendar year in which they are reported.

B. 1997 CPP Amendments

Overview – Restoring the Financial Sustainability of the Plan

The changes to restore the financial sustainability of the CPP were legislated in 1997 and became effective on 1 January 1998. The changes involved a balanced approach to sustain the Plan while ensuring fairness for future generations and between genders. The 1997 changes were based on the principles of increasing the level of funding in order to stabilize the contribution rate, improving intergenerational equity, and securing the financial status of the Plan over the long term. Key changes included short-term steep increases in the contribution rate combined with a freeze on the YBE, a slowing of the future growth of benefits, full funding of any new or improved benefits in the future, and the modification of the investment policy through the creation of the Canada Pension Plan Investment Board (CPPIB). A major change was modifying the financing approach from a pay-as-you-go basis to a hybrid of pay-as-you-go financing and full funding, called "steady-state funding".

Fuller Funding and Changes to Benefits

The schedule of contribution rates since the changes were implemented is shown in Table 2. The results of the 26th CPP Actuarial Report confirm that the contribution rate of 9.9% for years 2013 and thereafter is sufficient to maintain the long-term financial sustainability of the Plan. The combination of a freeze on the YBE at $3,500 and the continued increase in the YMPE has led to the contributory earnings base increasing each year, which results in higher Plan contributions and revenue.

Table 2 Schedule of CPP Contribution Rates

Year	Contribution Rate (%)
1997	6.0
1998	6.4
1999	7.0
2000	7.8
2001	8.6
2002	9.4
2003+	9.9

Prior to the changes, retirement, survivor and disability benefits were based on a formula that indexed wages earned over a working lifetime using a final three-year average of the YMPE. This formula was changed to a five-year average and the eligibility rules for disability benefits were strengthened. These changes resulted in reducing the future growth of benefits by about 10%.

Changes to the Plan's Financing Provisions

Steady-state funding was introduced to replace pay-as-you-go financing with the purpose of building an asset reserve necessary to stabilize the ratio of assets to expenditures over time. Investment earnings on this pool of assets help to pay benefits as the large cohort of baby boomers retires. Steady-state funding is described in more detail in the next subsection.

Incremental full funding was introduced in order to require that changes to the CPP that improve or add new benefits be fully funded. That is, the costs of these benefits must be paid as the benefit is earned, and any costs associated with benefits that have already been earned must be amortized and paid for over a defined period of time consistent with common actuarial practice. These additional costs may take the form of temporary and/or permanent

contribution rate increases. The steady-state rate is determined independently of the incremental rate. As such, the Plan is financed on a dual basis – the steady-state rate applies only to the Plan before considering of any new or improved benefits since 1997, whereas the full funding incremental rate applies to new or improved benefits. The resulting sum of the steady-state and incremental rates is the minimum contribution rate of the Plan.

Both of these funding objectives were introduced to improve fairness and equity across generations, as well as to improve the long-term financial sustainability of the Plan. The move to steady-state funding eases some of the contribution burden on future generations. Under incremental full funding, each generation that will receive benefit enrichments is more likely to pay for it in full so that its costs are not passed onto future generations.

New Investment Policy

It was determined by the review of the CPP in 1996 that to ensure the financial sustainability of the Plan, higher rates of return would be required than had been previously thought. Continuing to invest solely in short-term and low risk fixed income instruments was not considered to be an option since it would ultimately require a higher contribution rate. Hence, the CPP Investment Board was created to invest the assets of the Plan in a diversified portfolio with the aim of achieving higher returns without undue risk of loss. All CPP assets were transferred to the CPPIB by April 2007. The role of the CPPIB will become increasingly important as assets are expected to grow rapidly over the next nine years with contributions to the Plan projected to exceed expenditures over this period. After 2022, it is projected that an increasing proportion of investment income will be required to meet expenditures. Although net cash flows (contributions less expenditures) are projected to be negative after 2022, asset growth is still expected to continue.

Strengthened Stewardship and Accountability

The 1997 Amendments also strengthened stewardship and accountability to Canadians. Specifically, the statutory periodic reviews of the Plan by the federal and provincial finance ministers were increased from once every five years to every three years. Moreover, if a triennial review reveals that major changes are required to be made to the Plan; Canadians are to be informed in advance of any such changes being made. Self-sustaining provisions were also put in place to safeguard the Plan in the event that the minimum contribution rate exceeds the legislated contribution rate and no recommendation is made by the federal and provincial Ministers of Finance to either increase the legislated rate or maintain it.

Further to the changes of 1997, the federal, provincial and territorial finance ministers took additional steps in 1999 to strengthen the transparency and accountability of actuarial reporting on the CPP. They endorsed regular independent peer reviews of such reports and consultations by the Chief Actuary with experts on the assumptions to be used in the actuarial reports. The most recent independent review of the statutory actuarial report on the CPP confirmed that the work of the Chief Actuary meets professional standards of actuarial practice and is of sound quality. To ensure the quality of future actuarial reports, the Chief Actuary continues to consult with experts in the fields of long-term demographic and economic projections.

In summary, the 1997 Amendments resulted in the financial sustainability of the Plan being restored and maintained as confirmed in subsequent actuarial reports. The measures

implemented ensure strengthened stewardship, accountability and transparency regarding the Plan and its finances.[2]

C. Steady-State Funding of the CPP

Steady-state funding is a partial funding approach that is a hybrid of pay-as-you-go financing and full funding, where the level of prefunding depends on the best-estimate assumptions. Steady-state funding was introduced as part of the 1997 CPP Amendments in order to build a greater reserve of assets and stabilize the ratio of assets to expenditures over time.

The steady-state methodology results in a stable contribution rate over the long term and helps to improve intergenerational equity. When the CPP financing methodology was examined in 1997, intergenerational equity was one of the primary concerns. Maintaining a pure pay-as-you-go approach would have resulted in significant increases in the contribution rate over time to provide the same benefits. On the other hand, moving to a full funding approach would have also created unfairness across generations, as some generations would have been required to pay higher contributions than others to cover both their own past unfunded liability as well as the past unfunded liability of current retirees. Financing of the CPP moved from a pay-as-you-go approach to partial funding in order to build a much larger fund than the one before the amendments. The partial funding approach provides a balance between pay-as-you-go and full funding and contributes to diversifying the financing of Canada's retirement income system. This diversification of financing approaches, in turn, strengthens the system against possible fluctuations in demographic, economic, and financial market conditions.

Steady-state funding involves a steady-state contribution rate that is the lowest rate sufficient to ensure the long-term financial sustainability of the Plan without recourse to further rate increases. This rate is calculated by the Chief Actuary based on regulations set out in legislation and is part of each actuarial valuation of the Plan that is made public. The steady-state contribution rate ensures the stabilization of the ratio of assets to the following year's expenditures (A/E ratio) over time, before the consideration of any full funding of improved or new benefits. Specifically, Regulations of the Canada Pension Plan require that the steady-state contribution rate be the lowest rate such that the A/E ratios in the 10th and 60th year following the third year of the most recent review period are the same.

At the time of the 1997 Amendments, the steady-state contribution rate was determined to be 9.9% for the year 2003 and thereafter as shown in the September 1997 (16th) Actuarial Report on the CPP. The contribution rate was thus scheduled to increase incrementally from 5.6% in 1996 to 9.9% in 2003 and to remain at that level thereafter. The legislated rate has remained at 9.9% in accordance with the schedule. In subsequent actuarial reports on the Plan, the steady-state contribution rate and more recent minimum contribution rate have been determined to be below 9.9%. Under the 26th CPP Actuarial Report, the minimum contribution rate was determined to be 9.84%. Under that report, with the legislated rate of 9.9%, the A/E ratio is expected to grow from 4.7 in 2013 to 5.4 by 2025 and 5.9 by 2075.

Table 3 shows the projected financial status of the CPP using the legislated contribution rate of 9.9%.

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[2] For further historical background on the 1997 Amendments, the reader may refer to "Fixing the Future: How Canada's Usually Fractious Governments Worked Together to Rescue the Canada Pension Plan" by Bruce Little.

Table 3 Projected Financial Status[1]

Year	PayGo Rate	Contribution Rate	Contributory Earnings	Contributions	Expenditures	Net Cash Flow	Investment Income[2]	Assets at 31 Dec.	Return[3]	Asset/ Expenditure Ratio
	(%)	(%)	($million)	($million)	($million)	($million)	($million)	($million)	(%)	
2013	8.78	9.90	427,762	42,348	37,575	4,773	7,547	187,415	4.16	4.73
2014	8.92	9.90	444,048	43,961	39,601	4,360	9,233	201,008	4.76	4.80
2015	9.07	9.90	461,583	45,697	41,888	3,809	10,432	215,249	5.03	4.87
2016	9.19	9.90	481,371	47,656	44,237	3,419	11,535	230,203	5.21	4.94
2017	9.29	9.90	501,091	49,608	46,564	3,044	12,656	245,903	5.35	5.02
2018	9.39	9.90	521,723	51,651	48,975	2,676	13,506	262,084	5.35	5.08
2019	9.50	9.90	543,322	53,789	51,590	2,199	16,190	280,472	6.03	5.15
2020	9.62	9.90	566,009	56,035	54,422	1,613	17,431	299,517	6.08	5.21
2021	9.74	9.90	590,261	58,436	57,495	941	18,911	319,368	6.18	5.25
2022	9.88	9.90	615,338	60,918	60,778	140	20,271	339,779	6.23	5.29
2023	10.01	9.90	641,395	63,498	64,229	(731)	21,534	360,582	6.23	5.32
2024	10.16	9.90	667,933	66,125	67,829	(1,704)	22,812	381,691	6.23	5.33
2025	10.28	9.90	695,678	68,872	71,547	(2,675)	24,123	403,138	6.23	5.35
2026	10.40	9.90	724,880	71,763	75,357	(3,594)	25,459	425,003	6.23	5.36
2027	10.49	9.90	755,125	74,757	79,232	(4,475)	26,815	447,344	6.23	5.38
2028	10.57	9.90	787,293	77,942	83,195	(5,253)	28,198	470,289	6.23	5.39
2029	10.64	9.90	820,237	81,203	87,273	(6,070)	29,617	493,836	6.23	5.40
2030	10.70	9.90	854,642	84,610	91,439	(6,829)	31,077	518,084	6.23	5.42
2031	10.76	9.90	889,359	88,047	95,667	(7,620)	32,577	543,041	6.22	5.43
2032	10.80	9.90	925,627	91,637	99,940	(8,303)	34,126	568,864	6.22	5.46
2033	10.82	9.90	963,885	95,425	104,277	(8,852)	35,730	595,742	6.22	5.48
2034	10.83	9.90	1,004,011	99,397	108,724	(9,327)	37,387	623,802	6.22	5.51
2035	10.84	9.90	1,045,706	103,525	113,304	(9,779)	39,120	653,143	6.21	5.53
2036	10.83	9.90	1,089,840	107,894	118,036	(10,142)	40,945	683,946	6.21	5.56
2037	10.82	9.90	1,136,148	112,479	122,910	(10,431)	42,864	716,379	6.21	5.60
2038	10.81	9.90	1,183,732	117,189	127,925	(10,736)	44,887	750,530	6.21	5.64
2039	10.79	9.90	1,234,266	122,192	133,116	(10,924)	47,037	786,643	6.21	5.68
2040	10.78	9.90	1,285,576	127,272	138,521	(11,249)	49,298	824,692	6.21	5.72
2041	10.77	9.90	1,339,172	132,578	144,180	(11,602)	51,686	864,776	6.21	5.76
2042	10.76	9.90	1,394,574	138,063	150,095	(12,032)	54,215	906,959	6.21	5.80
2043	10.77	9.90	1,451,536	143,702	156,288	(12,586)	56,876	951,249	6.21	5.84
2044	10.78	9.90	1,510,635	149,553	162,793	(13,240)	59,649	997,657	6.21	5.88
2045	10.79	9.90	1,571,695	155,598	169,646	(14,048)	62,547	1,046,156	6.21	5.92
2050	11.01	9.90	1,904,295	188,525	209,587	(21,062)	78,832	1,317,472	6.21	6.02
2055	11.32	9.90	2,294,408	227,146	259,643	(32,497)	97,630	1,628,749	6.21	6.01
2060	11.50	9.90	2,772,797	274,507	318,852	(44,345)	118,864	1,980,577	6.21	5.97
2065	11.49	9.90	3,372,805	333,908	387,678	(53,770)	143,875	2,397,107	6.21	5.95
2070	11.44	9.90	4,115,733	407,458	470,939	(63,481)	174,565	2,909,175	6.21	5.94
2075	11.45	9.90	5,011,843	496,172	573,725	(77,553)	212,142	3,535,073	6.21	5.92
2080	11.53	9.90	6,078,663	601,788	700,825	(99,037)	256,924	4,278,419	6.21	5.86
2085	11.66	9.90	7,349,817	727,632	856,862	(129,230)	308,597	5,132,799	6.21	5.75
2090	11.77	9.90	8,887,446	879,857	1,046,206	(166,349)	366,815	6,092,658	6.21	5.60

(1) Table 3 corresponds to Table 11 in the 26th CPP Actuarial Report.
(2) Investment income includes both realized and unrealized gains and losses.
(3) Returns are net of all investment expenses.

III. Analysis of Assets and Liabilities of the CPP

This section presents an analysis and comparison of the assets and obligations (liabilities), i.e. actuarial balance sheet[3], of the Plan under different closed and open group methodologies. Two measures of the Plan's financial status are analyzed for each methodology: the difference between the Plan's assets and its liabilities (this difference is termed "asset excess", if positive, or "asset shortfall", if negative) and the total Plan's assets as a percentage of its liabilities. Both measures provide an indication of the extent to which the Plan's obligations are covered by its assets.

A. General Methodology

A closed group includes only current participants of a plan, with no new entrants permitted. In comparison, an open group is one that includes all current and future participants of a plan. Two types of closed groups are discussed in this section: a closed group without future benefit accruals for the group's members, and a closed group with future accruals for its members. Prior to the 25th CPP Actuarial Report, the closed group without future benefits accruals methodology was historically used in the CPP actuarial reports to value the Plan's liabilities. Following the publication of OCA's Actuarial Study No. 8 "Technical Aspects of the Financing of the Canada Pension Plan" in 2010, the Plan's actuarial balance sheet based on an open group methodology was also included in the 25th CPP Actuarial Report. Further, following the publication of Actuarial Study No. 10, the 26th CPP Actuarial Report has put more emphasis on actuarial balance sheet on an open group basis, while including information on CPP assets and liabilities on the closed group without future benefit accruals methodology as a footnote in the report.

The choice of the methodology used to produce a social security pension system's actuarial balance sheet is mainly determined by the system's financing approach. For fully funded systems, the accrued liabilities are assumed to be funded in advance. Therefore balance sheets under closed groups with or without future accruals are appropriate for such plans. On the other hand, pay-as-you-go and partially funded systems represent social contracts where, in any given year, current contributors allow the use of their contributions to pay current beneficiaries' benefits. As a result, such social contracts create a claim for current and past contributors to contributions of future contributors. The proper assessment of the financial sustainability of a social security pay-as-you-go or partially funded system by means of its balance sheet should take these claims into account. The traditional closed group methodologies do not reflect these claims since only current participants are considered. In comparison, the open group approach accounts explicitly for these claims by considering the benefits and contributions of both current and future plan participants. Closed group and open group methodologies for the CPP are discussed in this section.

For all balance sheets discussed in this section, it is assumed that future contributions are determined using the legislated contribution rate of 9.9%. It is also assumed that the assets of the Plan are invested in the best-estimate portfolio of the 26th CPP Actuarial Report and consist ultimately of 50% invested in equities, 30% in fixed income securities, and 20% in inflation-sensitive assets, such as real estate and infrastructure. The ultimate annual real and nominal returns on this portfolio are assumed to be 4.0% and 6.2%, respectively. For the purpose of determining actuarial assets and liabilities, the future cash flows are discounted

[3] In this study the terms "balance sheet" and "actuarial balance sheet" are used interchangeably.

using the assumed nominal rate of return on the CPP assets. It could be argued, that such a discount rate is not appropriate for determining the Plan's assets and liabilities since the CPP is a partially funded plan largely financed by future contributions. The study addresses the use of alternative discount rates based on the growth in the contributory base under an open group approach in Section V.

Another important element of the methodology used to determine the components of the CPP balance sheets is the length of the projection period. In this study the cash flows are projected over an extended time period of 150 years. Subsection E provides the rationale for this choice.

B. Closed Group without Future Accruals

For this group, no new entrants to the Plan are permitted, and current plan participants who are not receiving benefits at the valuation date are assumed to make no further contributions beyond that date, and hence accrue no further benefits.

To determine the actuarial liability under the closed group approach, the benefits that will be paid in respect of CPP participation up to and including the valuation date must first be projected. For beneficiaries in pay, expenditures are projected using the best-estimate assumptions of the 26th CPP Actuarial Report with benefits increased annually in line with inflation as provided under the current Plan. For contributors, the projection is also based on the best-estimate assumptions of the Plan with the following exceptions:

- No new entrants to the Plan are included; and
- Current Plan participants who are not receiving benefits at the valuation date are assumed to make no further contributions beyond that date. Their projected benefits are calculated by assuming they will have no pensionable earnings from the valuation date up to the year of benefit take-up. In accordance with the Plan's provisions, the YMPE is still projected to the year of benefit take-up, and pre-valuation date pensionable earnings are still indexed to the year of benefit take-up using projected nominal wage increases, i.e. changes in the Consumer Price Index (CPI) plus real wage increases.

The maximum contributory period for each Plan participant is 47 years; that is, from age 18 to 65. Some periods of low pensionable earnings may be excluded from the benefit calculation by reason of pensions commencing after age 65, disability, child-rearing for a child less than seven years of age, and the low-earnings drop-out provision.

The low-earnings drop-out provision allows for a number of years with low or zero earnings to be dropped from the calculation of the retirement benefit. For example, for someone who takes his or her retirement benefits at age 65 in 2014, the provision allows for 17% of the number of months with the lowest earnings (up to a maximum of about eight years) to be dropped from the calculation of the benefit. The low-earnings drop-out provision was 15% prior to 1 January 2012, 16% between 1 January 2012 and 31 December 2013, and has increased to 17% on 1 January 2014.

For the purpose of determining the projected benefits, the low-earnings drop-out provision is applied to the period up to the valuation date. Thus, if a participant has been eligible to contribute for a period of 30 years prior to the valuation date, and is assumed to take his/her retirement benefit at age 65, then only 17% of those years (about 5, in this example) will be dropped and the maximum contributory period will be 42 years (assuming no other drop-outs apply).

A participant's retirement pension is equal to 25% of the average of the YMPE for the year of his or her retirement and the four previous years, referred to as the Maximum Pensionable Earnings Average (MPEA), adjusted to take into account the contributor's pensionable earnings. For this purpose, the contributor's pensionable earnings for any given month are indexed by the ratio of the MPEA for the year of retirement to the YMPE for the year to which the given month belongs. It follows that if a contributor paid contributions on earnings equal to the YMPE for thirty years, his average adjusted earnings would be determined by multiplying his MPEA by the ratio of 30/42.

The resulting projected expenditures are next discounted using the expected rate of return on the overall CPP assets to determine their present value. This is the actuarial liability of the Plan under the closed group without future benefit accruals approach. The assets under this approach consist of the Plan's current assets.

Under this approach, as at 31 December 2012, the Plan's asset shortfall is $830 billion and the total assets represent 17.4% of the actuarial liabilities, as shown in Table 4.

As a result of the 1997 CPP amendments, the Plan has been moving away from pure pay-as-you-go financing (with a small contingency reserve) toward partial funding. However, it should be noted that full funding of the Plan was never intended by the stakeholders. Although the relative size of the asset excess or shortfall under the closed group without future accruals may be used as a measure of the Plan's financial status, the balance sheet under the closed group methodology does not reflect the nature of the partial financing approach where future contributions represent a major source of financing of future expenditures. Therefore, it is inappropriate to reach a conclusion regarding the Plan's financial sustainability considering only the asset shortfall or excess under the closed group balance sheet.

C. Closed Group with Future Accruals

For this group, no new entrants to the Plan are permitted, and current Plan participants who are not receiving benefits at the valuation date are assumed to continue contributing to the Plan beyond that date. Thus, current Plan participants also continue to accrue benefits with future salary increases in line with wage increases. As a result, the obligations side of the balance sheet includes the present value of future expenditures for current Plan participants, while the assets side includes the present value of their future contributions. The asset shortfall under this methodology as at 31 December 2012 is $566 billion. The balance sheet for the CPP using this alternative methodology is presented in Table 4 together, for comparison, with the closed group without future accruals methodology and the open group methodology, discussed next.

D. Open Group

An open group is defined as one that includes all current and future participants of a plan, where the plan is considered to be ongoing into the future, that is, over an extended time horizon. This means that future contributions of current and new participants and their associated benefits are considered in order to determine whether current assets and future contributions will be sufficient to pay for all future expenditures.

To determine the actuarial liability of the Plan under the open group approach, future expenditures with respect to current and future Plan participants are first projected using the best-estimate assumptions of the 26th CPP Actuarial Report. Next, in order to determine their

present value, these total projected expenditures are discounted using the expected nominal rate of return on CPP assets. This is the actuarial liability under the open group approach.

To determine the assets of the Plan under the open group approach, future contributions of current and future contributors are projected using the best-estimate assumptions of the 26th CPP Actuarial Report and the legislated rate of 9.9%. In order to determine their present value, these total projected contributions are then discounted using the expected nominal rate of return on current CPP assets. This present value is added to the Plan's current assets to obtain the total assets of the Plan.

The asset shortfall under the open group methodology as at 31 December 2012 is $9 billion, and the total assets cover 99.6% of the actuarial liabilities. As mentioned earlier, the future cash flows are discounted using the expected nominal rate of return on the assets, which are assumed to be invested in the best-estimate portfolio of the 26th CPP Actuarial Report. In addition, future contributions are calculated using the current legislated contribution rate of 9.9%.

The CPP balance sheet under this methodology was presented in the 26th CPP Actuarial Report. This information is further included in the Canada Pension Plan Annual Reports, Notes to the Canada Pension Plan Consolidated Financial Statements, as well as Public Accounts of Canada.

The Plan is intended to be long-term and enduring in nature, a fact that is reinforced by the federal, provincial, and territorial governments' joint stewardship through the established strong governance and accountability framework of the Plan. Therefore, if the Plan's financial sustainability is to be measured based on its asset excess or shortfall, it should be done so on an open group basis that reflects the partially funded nature of the Plan, that is, its reliance on both future contributions and invested assets as means of financing its future expenditures. The inclusion of future contributions and benefits with respect to both current and future participants in the assessment of the Plan's financial status confirms that the Plan is able to meet its financial obligations and is sustainable over the long term.

Table 4 Balance Sheet as at 31 December 2012 for the CPP: Groups with and without Future Benefit Accruals – Comparison of Methodologies
(9.9% contribution rate)

	Methodology		
	Excluding Future Benefit Accruals	Including Future Benefit Accruals	
Present Value as at 31 December 2012 (in $ billion)	Closed Group	Closed Group	Open Group
Assets			
Current Assets	175	175	175
Future Contributions	-	804	2,071
Total Assets (a)	175	979	2,246
Liabilities[1]			
Current Benefits	370	370	370
Future Benefits	635	1,175	1,885
Total Liabilities (b)	1,005	1,545	2,255
Asset Excess (Shortfall) (a) – (b)	(830)	(566)	(9)
Total Assets as a Percentage of Total Liabilities (%) (a)/(b)	17.4%	63.4%	99.6%

(1) Liabilities include operating expenses.

Compared to the closed group with accruals and the open group, the asset shortfall for the closed group without future benefit accruals is larger, as shown in Table 4. This is because there are no future contributions to the Plan as well as no future benefit accruals. Under the best-estimate assumptions, the present value of future contributions exceeds the present value of the associated future benefits, and, as a result, the asset shortfall decreases for the groups with accruals compared to group without future accruals. However, a substantial shortfall exists under the closed groups (with or without accruals), since these approaches do not fully account for future contributions as a major source of financing for the Plan.

E. Length of the Projection Period

In this study the cash flows are projected over an extended time period of 150 years. Subsection 115(1.1) of the *Canada Pension Plan* specifies that the CPP actuarial report should present financial information for a period of at least 75 years following the valuation date. For a closed group with or without future accruals, the projection of future contributions and expenditures for a 75-year period is sufficient to cover virtually all future contributions and expenditures associated with the group's participants. Nevertheless, the use of a 75-year projection period for the open group balance sheet could be viewed as insufficient. For example, a 75-year period was historically used to determine the long-term financial sustainability of the Old-Age, Survivors, and Disability Insurance (OASDI) program in the United States. However, the 2013 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds (the 2013 Trustees Report) states that "Consideration of summary measures alone (such as the actuarial balance and open group unfunded obligation[4]) for a 75-year period can lead to incorrect perceptions and to policy prescriptions that do not achieve sustainable solvency." The 2013 Trustees

[4] The term "unfunded obligation" refers to the difference between plan's obligations and assets, which is a value opposite of the asset excess or shortfall.

Report states further that the "measure that reflects the continued, and possibly increasing, annual shortfalls after 75 years is the unfunded obligation extended to the infinite horizon."

Table 5 presents the CPP open group balance sheet determined using different projection periods. By limiting the projection period, part of the future expenditures for cohorts that will enter the labour force during that time are excluded from the liabilities. However, most of the contributions for these cohorts are included in the assets. It could be seen from Table 5 that there is asset excess under the open group approach if the projection periods of 75, 100 and 125 years are used. The total assets as a percentage of total liabilities is 103.5%, 101.5% and 100.3% for the 75, 100 and 125-year projection periods, respectively. These figures compare to 99.6% using the chosen of 150-year projection period.

Using projection periods beyond 150 years yields a decreasing ratio of total assets to total liabilities. However, due to the discounting of the cash flows occurring more than 150 years in the future, these declines are marginal. The ratio of total assets to total liability decreases from 99.6% to 99.2% if the 175-year projection period is used and to 99.0% if the 200-year projection period is used.

Finally, it should be noted that although increasing the length of the projection period enhances the assessment of the financial sustainability of the Plan, it also increases the uncertainty of results.

Table 5 Open Group Balance Sheet as at 31 December 2012 for the CPP: Various Projection Periods
(9.9% contribution rate, $ billion)

	Length of the Projection Period in Years					
	75	100	125	150	175	200
Total Assets	1,897	2,078	2,183	2,246	2,279	2,300
Total Liability	1,833	2,048	2,176	2,255	2,298	2,324
Asset excess (shortfall)	64	30	7	(9)	(19)	(24)
Total Assets as a Percentage of Total Liabilities (%)	103.5%	101.5%	100.3%	99.6%	99.2%	99.0%

F. Reconciliation of Changes of Asset Shortfall for Closed Group without Future Accruals

This section provides a reconciliation of the assets shortfall for the closed group without future benefit accruals between the 25th and 26th CPP Actuarial Reports. In the past, this information was included in the CPP Actuarial Reports. However, in line with Recommendation #4 of the independent peer review panel that reviewed the 25th CPP Actuarial Report this reconciliation was not presented in the 26th CPP Actuarial Report, but instead is included in this study.

The major factors that account for the changes in the asset shortfall under the closed group approach without future accruals between the 25th and 26th CPP Actuarial Reports are identified in Table 6. It should be noted that demographic assumptions regarding fertility and migration do not impact CPP assets and liabilities under the closed group without future accrual approach, since only the existing Plan's participants are considered.

Table 6 Reconciliation of Changes in the Asset Shortfall from 25th to 26th CPP Actuarial Report for Closed Group without Future Benefit Accruals
($ Billion)

25th CPP Actuarial Report Asset Shortfall as at 31 December 2009	**(748.0)**
Update Valuation Date to 31 December 2012:	
Interest on asset shortfall	(97.8)
Contributions less current service cost	45.9
Subtotal: Update Valuation Date	**(799.9)**
Experience Update	
Actual investment returns in excess of assumed	13.9
Demographic, Economic and Benefit experience	(6.3)
Subtotal: Experience Update	**7.6**
Changes in Key Assumptions	
Mortality	(10.5)
Retirement	(2.0)
Disability	0.4
Employment	0.4
Real-wage differential	2.1
Price increases	7.8
Real rate of return on investments	(43.5)
Asset mix	4.9
Others	(3.2)
Subtotal: Assumption Changes	**(43.6)**
Change in Methodology	**6.1**
26th CPP Actuarial Report Asset Shortfall as at 31 December 2012	**(829.8)**

G. Summary of Assets and Liabilities of the CPP

The following Table 7 summarizes the assets, liabilities and the resulting asset excess or shortfall as at 31 December 2012 and 2022 for the three types of groups under the best-estimate assumptions of the 26th CPP Actuarial Report, the legislated contribution rate of 9.9%, and the expected real rate of return of 4.0% (6.2% nominal).

Table 7 Balance Sheet Summary as at 31 December 2012 and 2022 for the CPP: Groups with and without Future Benefit Accruals
(9.9% contribution rate)

Present Value as at 31 December (in $ billion)[1]	2012	2022
Closed Group without Future Accruals		
Assets		
Current Assets	175	340
Future Contributions	-	-
Total Assets (a)	175	340
Liabilities		
Current Benefits	370	635
Future Benefits	635	867
Total Liabilities (b)	1,005	1,502
Asset Excess (Shortfall) (c) = (a) - (b)	**(830)**	**(1,162)**
Total Assets as Percentage of Liabilities (a)/(b)	**17.4%**	**22.6%**
Closed Group with Future Accruals		
Assets		
Current Assets	175	340
Future Contributions	804	1,115
Total Assets (d)	979	1,455
Liabilities		
Current Benefits	370	635
Future Benefits	1,175	1,620
Total Liabilities (e)	1,545	2,255
Asset Excess (Shortfall) (f) = (d) - (e)	**(566)**	**(800)**
Change in Asset Excess or Shortfall (f) - (c)	264	362
Total Assets as Percentage of Liabilities (d)/(e)	**63.4%**	**64.5%**
Open Group		
Assets		
Current Assets	175	340
Future Contributions	2,071	2,841
Total Assets (g)	2,246	3,181
Liabilities		
Current Benefits	370	635
Future Benefits	1,885	2,561
Total Liabilities (h)	2,255	3,196
Asset Excess (Shortfall) (i) = (g) - (h)	**(9)**	**(15)**
Change in Asset Excess or Shortfall (i) - (f)	557	785
Total Assets as Percentage of Liabilities (g)/(h)	**99.6%**	**99.5%**

(1) Liabilities include operating expenses.

Table 7 shows that for the closed group without future accruals, the asset shortfall increases from $830 billion to $1,162 billion between 2012 and 2022. Despite the growth in the asset shortfall, the ratio of assets to obligations increases from 17% to 23% over the same period. The reason for that is twofold. Net cash flows to the Plan are expected to continue to be positive up to and including the year 2022. In addition, expected investment returns are 4.0% above inflation. Thus, positive net cash flows and investment returns result in the Plan's assets growing at a faster rate than its liabilities, which improves the ratio of the assets to liabilities.

The closed group with future accruals includes the future contributions and expenditures for current contributors in the calculation of the Plan's assets and liabilities. Under the best-estimate assumptions, the present value of future contributions exceeds the associated present value of future benefits earned, and as a result the asset shortfall decreases compared to the closed group without future accruals. Between 2012 and 2022, the asset shortfall for the closed group with future accruals increases from $566 billion to $800 billion. The ratio of the assets to liabilities is stable at around 64% in both years.

The open group includes future contributions and expenditures for both current and future participants in the calculation of the assets and liabilities. Thus, the asset shortfall decreases compared to both closed groups. Between 2012 and 2022, the asset shortfall increases slightly from $9 billion to $15 billion, and the ratio of the assets to liabilities remains stable at over 99%. The inclusion of the future contributions and benefits of current and future Plan participants demonstrates that the Plan is financially sustainable over the long term. The future contributions under the legislated contribution rate of 9.9% of contributory earnings in combination with investment earnings are sufficient to pay the future expenditures and build a larger fund. In turn, this larger fund provides additional capacity for mitigating impacts on the Plan's finances from future adverse demographic and economic environments.

IV. Open Group Modified Balance Sheet

A. Best-Estimate Scenario

In this section the open group balance sheet is presented in a modified form, such that the pay-as-you-go and funded components of the Plan are shown separately in order to analyze the assets and liabilities under each component. This modified balance sheet is first discussed under the best-estimate assumptions of the 26th CPP Actuarial Report. Next, the modified balance sheet is discussed under alternative discount rate assumptions that take into account the largely pay-as-you-go nature of the Plan.

As discussed in Section III, the CPP is financed using a steady-state contribution rate methodology that stabilizes the asset/expenditure ratio over time. This approach to financing the Plan is a form of partial funding, that is, a hybrid of pay-as-you-go financing and full funding. This hybrid nature of partial funding allows for part of a current year's expenditures to be financed from the same year's contributions, stemming from the pay-as-you-go component of the Plan. The remaining expenditures, if any, are covered using the underlying pension fund from the funded component of the Plan. Although there is a funded component to steady-state funding, its goal is not to fully fund the Plan. Rather, by stabilizing the asset/expenditure ratio, steady-state funding ensures that the Plan's contributions remain the primary source for covering the Plan's expenditures.

Table 8 presents the splitting of the projected contributions and expenditures into the pay-as-you-go and the funded components of the CPP under the best-estimate scenario and the legislated 9.9% contribution rate. By definition, under the pay-as-you-go component, the contributions and expenditures are exactly equal every year. Contributions for the funded component exist as long as the current year's contributions exceed the same year's expenditures. These excess contributions are added to the Plan's assets, which are invested by the CPPIB. The 26th CPP Actuarial Report projects that contributions will exceed expenditures up to and including the year 2022. Starting in 2023, the expenditures are then projected to be higher than contributions. These excess expenditures are allocated to the funded component of the Plan, and are financed by the invested assets.

Table 8 Splitting of CPP Contributions and Expenditures into Pay-As-You-Go and Funded Components

(9.9% contribution rate, $ billion)

	Pay-As-You-Go Component		Funded Component		Total[1]	
	Contributions (a)	Expenditures (b)	Contributions (c)	Expenditures (d)	Contributions (a) + (c)	Expenditures (b) + (d)
2013	37.6	37.6	4.7	0.0	42.3	37.6
2014	39.6	39.6	4.4	0.0	44.0	39.6
2015	41.9	41.9	3.8	0.0	45.7	41.9
2016	44.2	44.2	3.5	0.0	47.7	44.2
2017	46.6	46.6	3.0	0.0	49.6	46.6
2018	49.0	49.0	2.7	0.0	51.7	49.0
2019	51.6	51.6	2.2	0.0	53.8	51.6
2020	54.4	54.4	1.6	0.0	56.0	54.4
2021	57.5	57.5	0.9	0.0	58.4	57.5
2022	60.8	60.8	0.1	0.0	60.9	60.8
2023	63.5	63.5	0.0	0.7	63.5	64.2
2024	66.1	66.1	0.0	1.7	66.1	67.8
2025	68.9	68.9	0.0	2.6	68.9	71.5
2026	71.8	71.8	0.0	3.6	71.8	75.4
2027	74.8	74.8	0.0	4.4	74.8	79.2
2028	77.9	77.9	0.0	5.3	77.9	83.2
2029	81.2	81.2	0.0	6.1	81.2	87.3
2030	84.6	84.6	0.0	6.8	84.6	91.4
2031	88.0	88.0	0.0	7.7	88.0	95.7
2032	91.6	91.6	0.0	8.3	91.6	99.9
2033	95.4	95.4	0.0	8.9	95.4	104.3
2034	99.4	99.4	0.0	9.3	99.4	108.7
2035	103.5	103.5	0.0	9.8	103.5	113.3
2036	107.9	107.9	0.0	10.1	107.9	118.0
2037	112.5	112.5	0.0	10.4	112.5	122.9
2038	117.2	117.2	0.0	10.7	117.2	127.9
2039	122.2	122.2	0.0	10.9	122.2	133.1
2040	127.3	127.3	0.0	11.2	127.3	138.5
2045	155.6	155.6	0.0	14.0	155.6	169.6
2050	188.5	188.5	0.0	21.1	188.5	209.6
2055	227.1	227.1	0.0	32.5	227.1	259.6
2060	274.5	274.5	0.0	44.4	274.5	318.9
2065	333.9	333.9	0.0	53.8	333.9	387.7
2070	407.5	407.5	0.0	63.4	407.5	470.9
2075	496.2	496.2	0.0	77.5	496.2	573.7
2080	601.8	601.8	0.0	99.0	601.8	700.8
2085	727.6	727.6	0.0	129.3	727.6	856.9
2090	879.9	879.9	0.0	166.3	879.9	1,046.2

(1) As shown in Table 3 of subsection III.C.

The open group balance sheet shown in Table 4 of Section IV can be regrouped in a way that emphasizes the hybrid nature of partial funding and allows for a better understanding of how future expenditures are financed. As a first step, the assets and liabilities sides of the balance sheet are modified as follows:

- On the assets side, the present value of future contributions is broken down into the present value of future contributions that cover future expenditures (pay-as-you-go component future contributions shown in column (a) of Table 8) and the present value of future contributions in excess of future expenditures, which are invested (funded component future contributions shown in column (c) of Table 8);
- On the liabilities side of the balance sheet, the present value of future expenditures is similarly broken down into the present value of future expenditures covered by future contributions (pay-as-you-go component future expenditures shown in column (b) of Table 8) and the present value of future expenditures not covered by future contributions and therefore financed by the invested assets (funded component future expenditures shown in column (d) of Table 8).

Then, as the second step, the open group balance sheet is regrouped into its two components: pay-as-you-go and funded. Charts 1 and 2 illustrate the two steps to construct the open group modified balance sheet.

Chart 1 Open Group Modified Balance Sheet Approach – Step 1
(as at 31 December 2012, 9.9% contribution rate, $ billion)

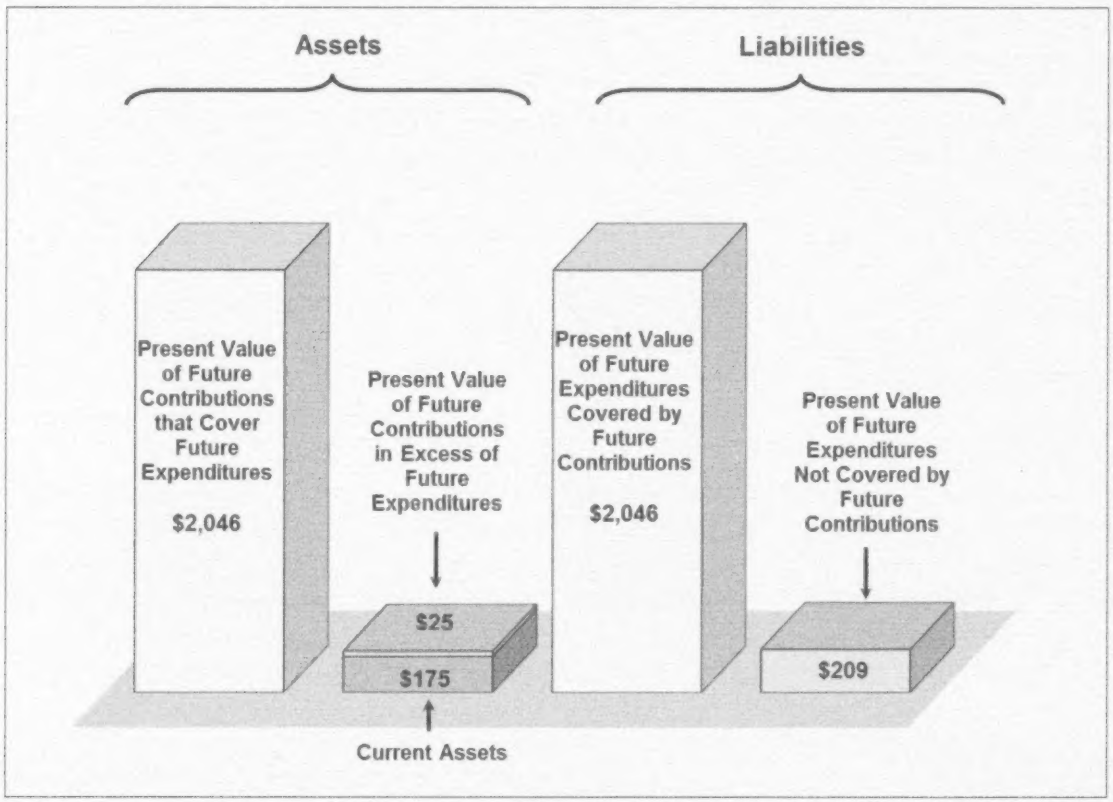

Chart 2 Open Group Modified Balance Sheet Approach – Step 2
(as at 31 December 2012, 9.9% contribution rate, $ billion)

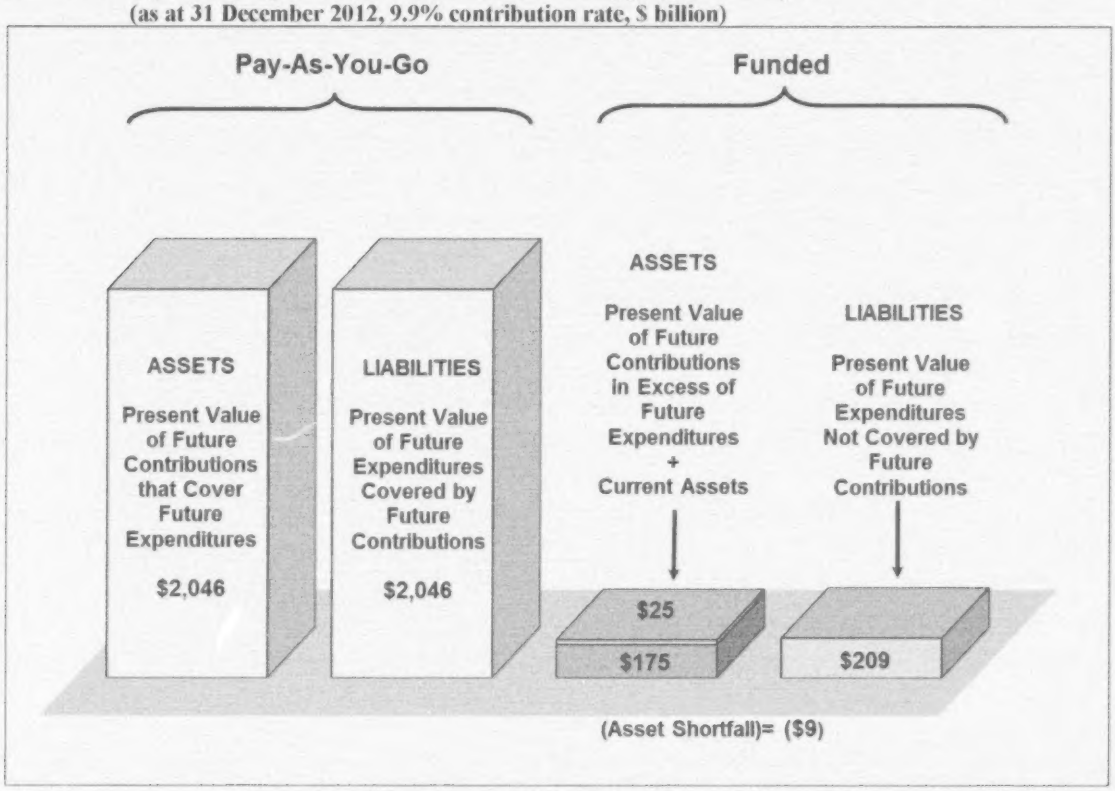

Chart 2 clearly shows that no asset excess or shortfall exists with respect to the pay-as-you-go component. Under pay-as-you-go financing, while both the present values of the assets and liabilities could vary depending on past experience and future actuarial assumptions, they will always remain equal. Under the funded component, an asset shortfall results when the total assets, consisting of the current invested assets and the present value of future contributions in excess of future expenditures, are not sufficient to pay the future expenditures not covered by future contributions. In the case of the open group under the best-estimate scenario, the asset shortfall is $9 billion.

The financial status of the funded component and its evolution over time provide meaningful measures of the financial status of the CPP. In addition, the relative sizes of the pay-as-you-go and funded obligations may be regarded as measures of the degree to which the Plan is funded. The open group modified balance sheet for years 2012 and 2022 is shown in Table 9.

The funded component's total assets fall short of its obligations by $9 billion as at 31 December 2012. By 2022, the present value of future contributions in excess of future expenditures under the funded component disappears since expenditures are projected to exceed contributions starting from 2023. The value of the Plan's assets increases to $340 billion and the asset shortfall rises further to $15 billion. However, the ratio of the total assets to total obligations remains in excess of 99%. The open group methodology confirms that the Plan is financially sustainable over the long term.

The decomposition of the Plan into the pay-as-you-go and funded components provides additional insight into the nature of the risks to which the CPP is exposed. Both the pay-as-you-go and funded components are subject to demographic and economic risks. The pay-as-you-go component, however, is not exposed to financial market risk since the associated cash flows are not invested. This is in contrast to the funded component, which is subject to financial market risk since its assets are invested. It is important that this additional risk to the funded component of the Plan, and hence to the Plan as a whole, is taken into account in considering both the short-term and long-term financial sustainability of the Plan. Moreover, this consideration will become increasingly important since the share of the funded component's obligations as a percentage of the total CPP's obligations is expected to increase over time. The funded component's share of the obligations was 9% as at the end of 2012, and is projected to increase to 11% by 2022 and to 17% by 2075.

Table 9 Open Group Modified Balance Sheet – Best-Estimate Scenario
(9.9% contribution rate)

Present Value (PV) as at 31 December (in $ billion) [1]	**2012**	**2022**
Pay-As-You-Go Component		
Assets = Liabilities		
PV of Future Contributions that Cover Future Expenditures = PV of Future Expenditures Covered by Future Contributions **(a)**	2,046	2,841
No asset excess (shortfall) exists for pay-as-you-go component.		
Funded Component		
Assets		
PV of Future Contributions in Excess of Future Expenditures	25	0
Current Assets	175	340
Total Assets for funded component **(b)**	200	340
Liabilities		
PV of Future Expenditures Not Covered by Future Contributions **(c)**	209	355
Asset excess (shortfall) with respect to funded component **(d) = (b) - (c)**	**(9)**	**(15)**
Total Plan		
Total Assets (e) = (a) + (b)	2,246	3,181
Total Liabilities (f) = (a) + (c)	2,255	3,196
Total Asset Excess (Shortfall) (g) = (e) - (f)	(9)	(15)
Total Assets as a Percentage of Total Liabilities (h) = (e)/(f)	99.6%	99.5%
Component liabilities as a percentage of total liabilities:		
Pay-As-You-Go (a)/(f)	**91%**	**89%**
Funded (c)/(f)	**9%**	**11%**

(1) Liabilities include operating expenses.

The present values in Table 9 were determined using a discount rate equal to the expected nominal rate of return on the CPP assets (6.2%). This methodology is similar to the one used for the Trustees Report on the OASDI program in the United States, where the open group balance sheet entries are determined by discounting the program's future contributions and expenditures using the effective yield on the trust fund assets. However, the cash flows of the pay-as-you-go component are not invested and depend on the demographic and economic factors other than market returns. Therefore, it could be argued that the use of the expected return on the CPP assets as a discount rate for the pay-as-you-go component may not be appropriate.

It is desirable for a discount rate used to determine the present values of future cash flows of a pension system to reflect growth in the system's financing base. For a pure pay-as-you-go

system that is financed by contributions only, such a discount rate should be equal to the growth in the contributory base, as suggested by Settergren and Mikula (2005). The financing base of a pay-as-you-go system with a fund, such as the CPP, has two components: future contributions (contributory base) and the invested assets of the system. As such, discounting the cash flows of the pay-as-you-go component using the growth in the contributory base and discounting the cash flows of the funded component using the expected return on the CPP assets represent an attractive choice.

The nominal growth in the contributory base consists of three components: growth in the real-wage increase, inflation and growth in the number of contributors. Based on the best-estimate assumptions of the 26th CPP Actuarial Report, the average nominal growth in the contributory base is 4.0%, or 1.8% in real terms. Table 10 compares an open group modified balance sheet as at 31 December 2012 with the pay-as-you-go component's cash flows discounted using the growth in the contributory base and the expected rate of return on the CPP assets. The funded component's cash flows are discounted using the rate of return on the invested CPP assets (ultimate real rate of return of 4.0% or nominal rate of return of 6.2%) under both scenarios. It is worth reminding that the projection period is limited to 150 years.

Table 10 Open Group Modified Balance Sheet – Alternative Discount Rates
Discount Rates for Pay-As-You-Go Component: Growth in Contributory Base and Expected Rate of Return on CPP Assets
Discount Rate for Funded Component: Expected Rate of Return on CPP Assets
(9.9% contribution rate)

	Discount Rate for Pay-As-You-Go Component	
Present Value (PV) as at 31 December 2012 (in $ billion) [1]	**Growth in Contributory Base (4.0%)**	**Nominal Rate of Return on the CPP Assets (6.2%)**
Pay-As-You-Go Component		
Assets = Liabilities		
PV of Future Contributions that Cover Future Expenditures = PV of Future Expenditures Covered by Future Contributions **(a)**	6,284	2,046
No asset excess (shortfall) exists for pay-as-you-go component.		
Funded Component[2]		
Assets		
PV of Future Contributions in Excess of Future Expenditures	25	25
Current Assets	175	175
Total Assets for funded component **(b)**	200	200
Liabilities		
PV of Future Expenditures Not Covered by Future Contributions **(c)**	209	209
Asset excess (shortfall) with respect to funded component **(d) = (b) – (c)**	**(9)**	**(9)**
Total Plan		
Total Assets (e) = (a) + (b)	6,484	2,246
Total Liabilities (f) = (a) + (c)	6,493	2,255
Total Asset Excess (Shortfall) (g) = (e) – (f)	(9)	(9)
Total Assets as a Percentage of Total Liabilities (h) = (e)/(f)	99.9%	99.6%
Component liabilities as a percentage of total liabilities:		
Pay-As-You-Go (a)/(f)	**97%**	**91%**
Funded (c)/(f)	**3%**	**9%**

(1) Liabilities include operating expenses.
(2) Discounted at the nominal rate of return on the CPP assets.

Since the rate of growth in the contributory base is lower than the assumed rate of return on the CPP assets, the pay-as-you-go component assets and liabilities are much higher if the rate of growth in the contributory base is used as the discount rate. However, the Plan's asset excess or shortfall is generated only by the funded component and remains the same regardless of which discount rate is used for the pay-as-you-go component. Therefore, although the total Plan's liabilities increase from $2.3 trillion to $6.5 trillion, the asset shortfall remains at $9 billion.

The funded component's share of the total obligations decreases to 3% if the growth in the contributory base is used as a discount rate for the pay-as-you-go component. While the funded component may appear to be small, the impact of the Plan's exposure to financial market risk on the stability of the CPP contribution rate should not be underestimated. Both short-term and long-term negative market experiences could result in an increase in the minimum contribution rate above the legislated rate of 9.9%, as illustrated in the Uncertainty of Results section of the 26th CPP Actuarial Report.

B. Sensitivity Analysis of the Funded Component

The financial sustainability of a partially funded social security system is affected by various factors such as a country's economic growth, its demographic profile, as well as the ability of a system's assets to generate sufficient investment income. Different environments impact a system's contributions and/or expenditures, as well as assets needed to pay its expenditures. These impacts vary as to their extent and timing. For example, the economic growth of a country affects its system's contributions and expenditures through labour force participation rates, the rate of unemployment, and the growth in participants' earnings. While the fluctuations in these factors have an immediate impact on the system's contributions, there could be some time before the effect on expenditures is seen.

This subsection discusses the impacts of different demographic, economic and financial market environments other than those assumed under the best-estimate scenario on the assets and liabilities of the funded component of the Plan. This section concentrates on the funded component of the Plan, since this component determines the degree of exposure of the whole Plan to financial market risk.

The impacts are illustrated using the low-cost and high-cost assumptions for the total fertility rate, mortality rates, real wage increase and real rate of return on assets, as considered in the 26th CPP Actuarial Report. Table 11 below summarizes the assumptions used.

Table 11 Individual Sensitivity Tests

	Scenario	Assumption	
Total Fertility Rate (number of children per woman)	Higher Total Fertility Rate - Low Cost	1.90	
	Best Estimate	1.65	
	Lower Total Fertility Rate - High Cost	1.40	
		Life Expectancy in 2050 at age 65 (years)	
		Males	Females
Mortality Rates	Higher Mortality Rates - Low Cost	20.7	22.9
	Best Estimate	23.0	25.3
	Lower Mortality Rates - High Cost	25.6	27.7
Real Wage Increase	Higher Real Wage Increase - Low Cost	1.9%	
	Best Estimate	1.2%	
	Lower Real Wage Increase - High Cost	0.4%	
Real Rate of Return	Higher Real Rate of Return - Low Cost	5.5%	
	Best Estimate	4.0%	
	Lower Real Rate of Return - High Cost	2.5%	

This subsection also introduces the concept of a "breakeven contribution rate". The breakeven contribution rate is defined as the contribution rate that results in the elimination of the asset excess or shortfall, that is, the rate needed to be charged such that the obligations of the Plan would be equal to its assets under the open group approach. While the steady-state rate is defined as a rate that results in the asset to expenditure ratio being equal at two points of time, the breakeven contribution rate does not impose any restrictions on the relative sizes of asset and expenditures. However, the breakeven contribution rate will be affected by the length of the projection period used. As such, even if both rates could be used in assessing the financial sustainability of the Plan, they are not necessarily equal. The breakeven contribution rate under the best-estimate assumptions of the 26th CPP Actuarial Report is 9.94%.

Total Fertility Rate

The balance sheets for the Plan's funded component under the higher and lower total fertility rate scenarios using the legislated 9.9% contribution rate are presented in Table 12. The higher total fertility rate leads to an increase in the number of contributors in the medium and long term and eventually to an increase in the amount of benefits paid in the long-term. Thus, the total obligations of the Plan are higher. At the same time, the higher volume of contributions results in a bigger share of future expenditures being covered by the pay-as-you-go component, and thus in lower obligations for the funded component. As at 31 December 2012, the funded component obligations under the higher total fertility rate scenario are $114 billion compared to $209 billion under the best-estimate scenario, which results in an asset excess of $86 billion.

In comparison, under the lower total fertility rate scenario, there are fewer contributors and thus eventually less benefits being paid, leading to lower total CPP obligations. However, a lower volume of contributions leads to less expenditures being financed through the pay-as-you-go component. Thus, the funded component obligations increase significantly to $288 billion resulting in an asset shortfall of $88 billion.

Table 12 also demonstrates the degree to which the Plan could be exposed to financial market risk depending on the demographic environment. Such exposure is driven by the size of the obligations of the funded component, which can vary considerably in response to the given demographic environment. Demographic environments leading to higher volume of

contributions move the Plan closer to pay-as-you-go financing, reducing the size of the funded component obligations and, therefore, the Plan's exposure to financial market risk. In comparison, a decreasing volume of contributions increases the Plan's reliance on the invested assets as a source of financing of future expenditures, and thus increases Plan's exposure to financial market risk.

The breakeven contribution rate is 9.5% for the higher total fertility rate scenario and 10.4% for the lower fertility rate scenario.

Table 12 Open Group Funded Component Balance Sheet: Sensitivity to Fertility Rate
As at 31 December 2012 (9.9% contribution rate, $ billion)

	Total Fertility Rate		
	Best-Estimate 1.65	Higher 1.90	Lower 1.40
Funded Component			
Assets			
PV of Future Contributions in Excess of Future Expenditures	25	25	25
Current Assets	175	175	175
Total Assets for funded component **(a)**	200	200	200
Liabilities			
PV of Future Expenditures Not Covered by Future Contributions **(b)**	209	114	288
Asset Excess (Shortfall) (a) - (b)	**(9)**	**86**	**(88)**

Mortality Rates

The balance sheets for the Plan's funded component under the higher and lower mortality rates scenarios using the legislated 9.9% contribution rate are presented in Table 13. Under the higher mortality rates scenario, fewer individuals reach retirement age, and the payment period for beneficiaries is shorter. This scenario leads to a lower volume of contributions and lower expenditures, the latter effect being greater mainly due to shorter durations of benefit payments. As such, the total obligations of the Plan, as well as the obligations for both the pay-as-you-go and funded components, are lower. As at 31 December 2012, the funded component obligations under the higher mortality rates scenario are $121 billion, compared to $209 billion under the best-estimate scenario. In addition, the lower expenditures result in an increased present value of future contributions in excess of future expenditures of $28 billion, compared to $25 billion under the best-estimate scenario. Therefore, there is an asset excess of $121 billion.

The lower mortality rates scenario leads to higher life expectancies at age 65, and, therefore to higher expenditures. At the same time, since the best-estimate mortality rates before age 65 are already very low, under this scenario there is almost no change to the contributions stream. Therefore, while the total obligations of the Plan are higher, its pay-as-you-go component obligations are virtually unaffected. The burden of financing the increased expenditures falls on the funded component, with its obligations significantly increasing to $295 billion, resulting in an asset shortfall of $97 billion.

The breakeven contribution rate is 9.5% for the higher mortality rates scenario and 10.4% for the lower mortality rates scenario.

Table 13 Open Group Funded Component Balance Sheet: Sensitivity to Mortality Rates
As at 31 December 2012 (9.9% contribution rate, $ billion)

	Mortality Rates		
	Best-Estimate	Higher	Lower
	Life Expectancy in 2050 at age 65:		
	Male: 23.0 Female: 25.3	Male: 20.7 Female: 22.9	Male: 25.6 Female: 27.7
Funded Component			
Assets			
PV of Future Contributions in Excess of Future Expenditures	25	28	23
Current Assets	175	175	175
Total Assets for funded component (a)	200	203	198
Liabilities			
PV of Future Expenditures Not Covered by Future Contributions (b)	209	121	295
Asset Excess (Shortfall) (a) - (b)	**(9)**	**82**	**(97)**

Real Wage Increase

Table 14 presents the balance sheets for the Plan's funded component under the higher and lower real wage increase scenarios using the legislated contribution rate of 9.9%.

Under the higher real wage increase scenario, higher earnings lead to higher contributions and eventually to higher benefits being paid. Similar to the higher total fertility rate scenario, while the total obligations of the Plan increase, the pay-as-you-go component finances a higher share of future expenditures, thereby reducing the funded component obligations. As at 31 December 2012, the funded component's obligations under the higher real wage increase scenario are $77 billion, compared to $209 billion under the best-estimate scenario. In addition, the higher volume of contributions results in a longer period of time during which contributions exceed expenditures. The present value of future contributions in excess of future expenditures increases to $43 billion, compared to $25 billion under the best-estimate scenario. The result is an asset excess of $141 billion.

Under the lower real wage increase scenario, lower earnings produce a lower stream of contributions, and, eventually, a lower stream of benefits. Once again, the lower volume of contributions leads to a lower share of expenditures being financed by the pay-as-you-go component. Thus, the funded component obligations increase to $302 billion resulting in an asset shortfall of $106 billion.

The breakeven contribution rate is 9.4% for the higher real wage increase scenario and 10.6% for the lower real wage increase scenario.

Table 14 Open Group Funded Component Balance Sheet: Sensitivity to Real Wage Increase
As at December 2012 (9.9% contribution rate, $ billion)

	Real Wage Increase		
	Best-Estimate 1.2%	Higher 1.9%	Lower 0.4%
Funded Component			
Assets			
PV of Future Contributions in Excess of Future Expenditures	25	43	21
Current Assets	175	175	175
Total Assets for funded component (a)	200	218	196
Liabilities			
PV of Future Expenditures Not Covered by Future Contributions (b)	209	77	302
Asset Excess (Shortfall) (a) - (b)	**(9)**	**141**	**(106)**

Real Rate of Return on Assets

Changes in financial market returns do not affect the stream of contributions and expenditures for both the pay-as-you-go and funded components of the Plan under the legislated contribution rate of 9.9%. The size of the funded component obligations depends directly on the expected rate of return on assets, since the cash flows of this component are discounted at this rate. Therefore, a higher expected real rate of return leads to lower obligations for the funded component, and vice versa. As shown in Table 15, under the higher real rate of return scenario, the funded component liabilities decrease to $95 billion, resulting in an asset excess of $105 billion. Under the lower real rate of return scenario, the funded component obligations increase to $591 billion, producing an asset shortfall of $391 billion.

The breakeven contribution rate is 9.0% for the higher real rate of return scenario and 10.9% for the lower real rate of return scenario.

Table 15 Open Group Funded Component Balance Sheet: Sensitivity to Real Rate of Return on Assets
As at 31 December 2012 (9.9% contribution rate)

	Real Rate of Return		
	Best-Estimate 4.0%	Higher 5.5%	Lower 2.5%
Funded Component			
Assets			
PV of Future Contributions in Excess of Future Expenditures	25	25	25
Current Assets	175	175	175
Total Assets for funded component (a)	200	200	200
Liabilities			
PV of Future Expenditures Not Covered by Future Contributions (b)	209	95	591
Asset Excess (Shortfall) (a) - (b)	**(9)**	**105**	**(391)**

The provisions of the Canada Pension Plan including the regular review process by federal and provincial Ministers of Finance ensure the continual monitoring and management of the financing of the Plan. The sensitivity analyses presented in this subsection highlight the importance of managing the risks that the Plan could face from varying demographic, economic or financial market environments. The CPP is unique in terms of the structure and long-term nature of its obligations, the associated contributions and assets that must cover those obligations, and the dynamics between them. Further, although the main source of financing the Plan's future expenditures comes from its future contributions, the importance of the funded portion of the Plan should not be underestimated. As such, ensuring the Plan's long-term financial sustainability requires regularly assessing the characteristics of and the relationship between its assets and obligations.

V. Conclusion

Major amendments in 1997 led to the change in financing of the Canada Pension Plan from a pay-as-you-go basis to a form of partial funding called steady-state funding. The 1997 Amendments, and particularly steady-state funding, restored the Plan's financial sustainability for current and future generations. The purpose of the steady-state financing methodology is to produce an asset/expenditure ratio that is relatively stable over time.

From its inception, the CPP was never intended to be a fully funded plan. Instead, under steady-state funding, the goal is to build a reserve of assets such that investment income on this pool of assets will help to pay benefits when needed (for example, as the large cohort of baby boomers retires). The net cash flows of the Plan, that is, contributions less expenditures, are expected to be positive until 2022 inclusive, resulting in an increase in the Plan's assets and asset/expenditure ratio.

Although a number of approaches may be used to assess the Plan's financial status, the key financial measure for evaluating the Plan is the steady-state contribution rate, in particular its adequacy and stability over time.

Partially funded systems, as well as pay-as-you-go ones, represent social contracts where, in any given year, current contributors allow the use of their contributions to pay current beneficiaries' benefits. Such social contracts create claims for current and past contributors to contributions of future contributors. The proper assessment of the financial sustainability of a social security pay-as-you-go or partially funded system by means of its balance sheet should take into account these claims. The traditional closed group methodologies do not reflect these claims, since only current participants are considered. On the contrary, the open group approach accounts explicitly for these claims by considering the benefits and contributions of both the current and future system's participants.

Given the long-term nature of the CPP, the fact that its stewards are the federal, provincial and territorial governments, and the strong governance and accountability framework of the Plan, it is unlikely that the Plan would become insolvent. Therefore, if the Plan's financial sustainability is to be measured based on its asset excess or shortfall, it should be done so on an open group basis that reflects the partially funded nature of the Plan, that is, its reliance on both future contributions and invested assets as a means of financing future expenditures. The inclusion of future contributions and benefits with respect to both current and future contributors in the assessment of the Plan's financial status shows that the Plan is able to meet its financial obligations and is sustainable over the long term.

Future demographic, economic and financial market environments may differ from those assumed under the best-estimate scenario of the 26th CPP Actuarial Report, and, as such, may impact the Plan's finances differently. As different environments unfold over time, the Plan's stakeholders, as part of their regular reviews of the Plan, will need to consider the benefit and contribution structure of the Plan in light of how each side of the balance sheet is affected. In any case, regardless of which measure is used to assess the Plan's financial status, the unique characteristics of the Plan's long-term obligations and the assets needed to meet those obligations, as well as the dynamics between them should all be considered in ensuring the long-term financial sustainability of the CPP.

VI. Appendices

A. Principles to Guide Federal-Provincial Decisions on the Canada Pension Plan

This appendix presents the nine guiding principles that were formally put forth by the Plan's stakeholders as part of the CPP review of the late 1990s. At the time, the legislated contribution rate was set to increase to 10.1% (as mentioned in Principle 4) in accordance with a schedule of contribution rates, which was also shown in the 13th Actuarial Report on the CPP as at February 1992 and shown or discussed in several subsequent actuarial reports. This schedule was later replaced by a revised schedule as part of the amendments (see Table 2 in Section III.B). In addition, a Seniors Benefit (mentioned in Principle 2) had been proposed in the 1996 Federal Budget to replace the basic Old Age Security benefit and Guaranteed Income Supplement in 2001, but which was in fact subsequently revoked before it came into effect.

The nine guiding principles and the context surrounding them at the time of the review were as follows:

Following extensive consultations across Canada on the Canada Pension Plan, governments agreed that they must put to rest the worries that Canadians have that their CPP pensions will not be there for them when they retire in the future. They therefore agreed that they must solve the problems facing the CPP quickly, and that they will be guided by the following principles in doing so:

1. The CPP is a key pillar of Canada's retirement income system that is worth saving.
2. The CPP is an earnings-related program. Its fundamental role is to help replace earnings upon retirement or disability, or the death of a spouse – not to redistribute income. The income redistribution role is the responsibility of the income tax system, the Old Age Security/Guaranteed Income Supplement/Seniors Benefit, and other income-tested programs paid from general tax revenues.
3. The solutions to the CPP's problems must be fair across generations and between men and women.
4. The CPP must be affordable and sustainable for future generations. This requires fuller funding and a contribution rate no higher than the already legislated future rate of 10.1 per cent. In deciding how quickly to move to this rate, governments must take economic and fiscal impacts into account.
5. Governments must tighten administration as the first step towards controlling costs.
6. Disability and survivor benefits are important features of the CPP. However, they must be designed and administered in a way that does not jeopardize the security of retirement pensions.
7. Any further benefit improvements must be fully funded.
8. CPP funds must be invested in the best interests of plan members, and maintain a proper balance between returns and investment risk. Governance structures must be created to ensure sound fund management.
9. Governments must monitor changing economic, demographic, and other circumstances which can affect the CPP, and act to respond to these changing conditions. Annually, Ministers of Finance should provide Canadians with the appropriate information so they can judge for themselves that the integrity and security of the CPP is being protected.

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